Osborne, and Sansum—giving the details of this work has just appeared in the March issue of the Archives of Internal Medicine. A second paper, reporting the typical blood vessel and kidney lesions, is now in process of preparation, as all of the surviving, experimental animals have been killed.

We agree with the author that, clinically, individuals who consume large quantities of meats are inclined to have higher blood pressures than those who live on diets containing a preponderance of milk, fruits, and vegetables. High blood pressure, however, is not uncommon in vegetarians who consume large quantities of breads. We do not believe that significant changes in the blood-vessels could take place in so short a time as thirteen days, but we have observed rises in blood pressure with increases in protein intake, similar to those which the author mentions. In our grain-fed rabbits, it required fully eight months to bring about mild hypertension and the associated blood-vessel damage. In our mixed, high protein diets pathological changes began to appear in the course of two or three months. We believe that, in the past, experiments have been carried on for far too short a time. We are now endeavoring to ascertain what factor or factors in these high protein diets are responsible for the pathology. We believe that it may be due to the acid-ash of these proteins, and not to the proteins themselves. Dr. Donaldson's theories concerning suprarenal stimulation, meat extractives and endocrine disorders, should certainly be further investigated.

VALUE OF ORANGE JUICE AS AN ACCESSORY FOOD

By J. TRACY MELVIN,* M. D., *Porterville*

DISCUSSION *by T. C. McCleave, Oakland; J. E. Harvey, Pasadena; R. A. Kuhns, San Francisco.*

WE ALL know that there are many factors influencing the growth and development of a child besides the food it eats, and the physicians throughout the country have accumulated much material bearing on the subject, as well as upon the questions of the influence of impaired or faulty nourishment upon the physical and mental development of the child in its future adolescence and maturity.

We may accept the statement of Heubner that "persistent malnutrition where the primary causes, e. g., physical defects, insufficient food and faulty food habits, are removed, is characterized by the incapacity of the digestive organs adequately to utilize, in relation to their requirements, the energy assimilated with the food taken."

We find ourselves searching for some accessory food that will remedy that condition by its influence on digestion, and this search has led to the advocacy of various erratic dietary panaceas which have had a longer or shorter vogue in both popular and medical circles in past years. In this connection our attention has again recently been called to the evidence of the value of orange juice as such accessory food, but the relation of cause and effect has been questioned by many on the ground of failure to have identical controls with the class experimented with.

The last four years' experience at the Kaweah Kiddie Camp for Undernourished Children may be of some value in this connection, because each year it was held under identical conditions. Approximately 100 children, 50 boys and 50 girls, were under observation for one month preceding the camp, were in the camp one month each, and were checked up by the nurses for two months afterward.

These children were under direct medical supervision, with a trained nurse in charge, and an experienced physical director as superintendent. A scientific dietary was worked out for every meal for the entire time, and each year was identical with the other, except that in 1924, through private generosity, we had at our disposal forty-eight boxes of oranges, and each child received 2 ounces of orange juice with each meal.

These children, from 6 to 12 years old, were selected from all parts of the county, from among those in greatest need of improved nutrition and hygienic surroundings. All needed physical defects were removed before the children were admitted to the camp. The improvement in digestion and appetite, and complete absence of constipation among the children who received orange juice was noticeable from the first, and their weekly weights showed a steady and uniform gain above those of preceding camps, where orange juice was omitted. The total gain per hundred children being about 20 per cent greater than the gain at any preceding camp, and the average gain for each individual amounted to nearly five pounds per month.

The following is a comparative summary of the four years.

Summary	1921	1922	1923	1924
Total children	112	96	126	96
Number who lost weight	3	2	7	0
Average amount lost	1.33	1.5	2	0
Number, no loss or gain	10	8	10	6
Number who gained	99	80	109	90
Average gain, pounds	4	3.4	3.5	4 15/18

Although recognizing that on the average children usually do gain more rapidly during vacation-time than they do in school, and the advantages of camp life with its strict hygienic drill and instruction, and realizing the absence of control groups of children under other conditions for comparison, I nevertheless feel that this experiment indicates that the regular administration of orange juice with children's meals is an important factor in their improved health, demonstrating at least that greater gain in weight is shown under conditions which were as nearly identical as possible with those of other similar groups cared for in the same camp during preceding years.

DISCUSSION

T. C. MCCLEAVE, M. D. (Medical Building, Oakland)—The experience of Doctor Melvin as to the value of orange juice as an accessory food is confirmatory of the results of a number of other investigators. Under the direction of the Home Economics Department of the University of California, for instance, children of a large school were for a considerable period of time given—one-half of them—milk as a mid-morning meal, and the other half were given orange juice. The increase in weight and height of the orange juice group during the observation period was quite as good as, or even slightly better, than shown by the milk group.

These facts have been used by some enthusiasts to suggest that orange juice may, to some extent, advantageously replace milk in the dietary of children. This is an error, and it should be emphasized that orange juice is, as Melvin has wisely called it in the title of his paper,

*J. Tracy Melvin (Porterville, California), M. D. Gross Medical College, Denver. Practice limited to Tuberculosis. Hospital connections and appointments: Medical Director of the Springville Joint Tubercular Hospital; formerly member of the Colorado State Board of Health. United States Indian Service physician and President of the Tulare County Tuberculosis Association. Publications include casual articles in the Journal of Clinical Medicine and Colorado Medicine.

a very valuable "accessory" food which should have a place in the daily menu of every child, if possible, but should not be used as a substitute for any of the other essential elements of the diet.

JAMES E. HARVEY, M.D. (Central Building, Pasadena)—Thanks are due Doctor Melvin for calling our attention to orange juice as an aid to optimal nutrition, as it is all too likely to be overlooked through familiarity.

It would be of interest to know which of the four summers mentioned were hot at the particular location of the camp, as it is common knowledge that children do not gain in very hot weather. In the table given there is a gain in the first year over the second of .6 of a pound, which cannot be credited to orange juice. The gain for the fourth year, when oranges were used, is .8 of a pound more than the first year, but there is no exact proof that the gain is due solely to orange juice. From my experience in Pasadena, a cool summer, or even treatment with sun baths, might also have netted that gain. However, it is not unlikely that the use of orange juice was the probable cause of the gain.

In the Polytechnic Elementary School of Pasadena, a choice of either orange juice or milk is offered as the mid-morning lunch. In the nine weeks since January 5 of this year, twenty-two children taking orange juice who were present the entire time gained on an average 2.2 pounds, none losing weight; those taking milk, 2.2 pounds also, with none losing weight; while the average gain of the twenty-two children of corresponding ages composing the control group was but 1.3 pounds with six children losing weight. Six others of the control group were taking orange juice at home and did not lose. All three of the groups drink about the same amount of milk at home, 2.6 glasses for the orange juice children, 2.7 for the milk, and 2.4 for the controls.

The results just given point to orange juice with its vitamin C content, its valuable mineral matter and 12 per cent energy-giving sugar, as proving an excellent food accessory conducive to good growth gain, especially if sufficient milk is also included in the diet.

RALPH H. KUHNS, M. D. (135 Stockton Street, San Francisco)—It is to be hoped that this article will be widely read by physicians, as this fruit juice is of the utmost importance in the dietary of infants and children.

Among the general public and even some physicians, the idea persists that one must be cautious about giving any other food than the bottle during the first year. We know, however, that orange juice is not only a most powerful, but a most acceptable anti-scorbutic, and that no matter what artificial food is given, some such agent is necessary to supplement the anti-scorbutic element in cow's milk, which is not very strong, even in raw milk. Therefore, it is my practice to give orange juice at birth if the baby is put on an artificial food, as we have seen many babies which are pale, flabby, and rachitic, when fed exclusively on milk during the first year. No unfavorable effects have been noticed from orange juice, except that occasionally a baby will vomit. Such an infant will probably take strained tomato juice without any disturbance. Let me emphasize the fact that orange juice is not laxative, as is so commonly believed.

After anti-scorbutic treatment with orange juice the baby, which has had a poor appetite, has been irritable and tender to the touch, suddenly regains its appetite, is playful, and can be handled without causing pain. Orange juice is the remedy of first rank and should be given in dosage of about two ounces per day.

Canned tomato is also most efficacious and is sometimes tolerated when orange juice is not well borne.

Orange juice may be given intravenously in those patients where food cannot be tolerated by mouth and where there is extreme prostration. The orange juice is boiled for five minutes and is then rendered neutral or slightly alkaline by the addition of normal sodium hydroxide just previous to its injection. Hess and Unger report three cases where this procedure was carried out without the slightest untoward reaction, and with very prompt subsidence of the symptoms.

We must remember, however, that while orange juice is the most important prophylactic remedy and curative for infantile scurvy, it is of no value in the treatment of rickets.

As pasteurized milk always contains less anti-scorbutic vitamin than the corresponding milk before it has been heated, and as pasteurization involves, in some cases, not only subjection to heat, but oxidative processes which are destructive of the vitamin, we can realize the importance and necessity of adding orange juice to the dietary of artificially fed infants.

DOCTOR MELVIN (closing) — Referring to the point raised by Doctor Harvey that temperature in the different seasons, given in the comparative table, may be an important variant in causing gains among children, the following is the record for those months of each year as taken by the nearest official observer:

	1920 July-August	1921 July-August	1922 July-August	1923 July-August	1924 July-August
Mean Maximum	98-99	103-100	105-101	99-96	99-100
Daily Mean	73-75	86-81	83-82	75-71	81-81

SUPPLEMENTARY NOTE

In July, 1925, there were admitted to the camp, under identical conditions of the previous years, forty-six undernourished girls of an average underweight of 9½ pounds.

Orange juice, one ounce three times a day, was not available until the second week, after which it was given regularly.

During August there were admitted fifty-eight boys, averaging 9¾ pounds underweight. They received the orange juice the entire time. In four weeks the girls gained an average of 3.9 pounds. Maximum gain, 7¾ pounds. The boys gained an average of 5.4 pounds. Maximum gain, 10¼ pounds.

The maximum daily temperature at this station averaged 101 in July, and 96 in August.

Trepol and neotrepol not acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that trepol and neotrepol, bismuth preparations for use in the treatment of syphilis, marketed by the Anglo-French Drug Company, are not acceptable for new and non-official remedies. Trepol, offered in the form of ampules, claimed to contain basic tartrobismuthate of potassium and sodium, was rejected because the product does not represent a "tartrobismuthate of potassium and sodium," but is instead substantially a basic bismuth tartrate, and because no adequate tests for the control of its identity and uniformity are furnished. Neotrepol, supplied in the form of ampules containing metallic bismuth in suspension, was rejected because the amount of active ingredient claimed to be contained in the ampules is not in accord with the amount declared to be present.—(Journal A. M. A., Jan. 9, 1925, p. 135.)

"This much I can say with definiteness—namely, that there is no scientific basis for the denial of religion—nor is there in my judgment any excuse for a conflict between science and religion, for their fields are entirely different. Men who know very little of science and men who know very little of religion do indeed get to quarreling, and the onlookers imagine that there is a conflict between science and religion, whereas the conflict is only between two different species of ignorance."—Robert A. Millikan (Collier's).

Nature seems stingy with her rewards. Men strive long and hard for small thrills of satisfaction and climax. The appetite for fulfilment seldom is satisfied. This is nature's way to keep men eagerly on the path to the good. Modern life has developed many diversions, often seemingly innocent, which yet, by dissipating the urge to creative effort, destroy the chief source of human values. —Antioch Notes.